AMENDMENTS TO THE CLAIMS:

All pending claims are set forth below. Cancelled and withdrawn claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough.~~ The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), and (not entered). Please AMEND claims 1, 8, 12, 13, 19, 31, 32 and 33 in accordance with the following:

1. (currently amended) A lithium-sulfur battery comprising:

a negative electrode including a negative active material selected from the group consisting of materials in which lithium intercalation reversibly occurs, a lithium alloy, and a lithium metal;

a positive electrode including a positive active material comprising at least one sulfur-based compound selected from the group consisting of elemental sulfur and organosulfur compounds, and an electrically conductive material; and

an electrolyte including electrolyte salts and mixed organic solvents;

wherein

the mixed organic solvents of said electrolyte comprise at least two different groups selected from the group consisting of a weak polar solvent group, which is capable of dissolving elemental sulfur, a strong polar solvent group, which is capable of dissolving lithium polysulfide, and a lithium protection solvent group, which forms a good protective layer on a lithium surface, ~~and~~

the mixed organic solvents comprise at least two or more solvents selected from same group, and

where the weak polar solvent group is utilized, the mixed organic solvent includes less than 50% by weight of the weak polar solvent.

2. (original) The lithium-sulfur battery according to claim 1, wherein the weak polar solvent is selected from the group consisting of aryl compounds, cyclic or noncyclic ether compounds, and noncyclic carbonate compounds, and has a dielectric coefficient of less than 15.

3. (original) The lithium-sulfur battery according to claim 1, wherein the strong polar solvent is selected from the group consisting of cyclic carbonate compounds, sulfoxide compounds, lactone compounds, ketone compounds, ester compounds, sulfate compounds, and sulfite compounds, and has a dielectric coefficient of more than 15.

4. (original) The lithium-sulfur battery according to claim 1, wherein the lithium protection solvent is selected from the group consisting of saturated ether compounds, unsaturated ether compounds, heterocyclic compounds including N, O and S.

5. (original) The lithium-sulfur battery according to claim 2, wherein the weak polar solvent comprises one solvent selected from the group consisting of xylene, dimethoxyethane, 2-methyltetrahydrofurane, diethyl carbonate, dimethyl carbonate, toluene, dimethyl ether, diethyl ether, diglyme and tetraglyme.

6. (original) The lithium-sulfur battery according to claim 3, wherein the strong polar solvent comprises one solvent selected from the group consisting of hexamethyl phosphoric triamide, γ-butyrolactone, acetonitrile, ethylene carbonate, propylene carbonate, N-methyl pyrrolidone, 3-methyl-2-oxazolidone, dimethyl formamide, sulfolane, dimethyl acetamide, dimethyl sulfoxide, dimethyl sulfate, ethylene glycol diacetate, dimethyl sulfite, and ethylene glycol sulfite.

7. (original) The lithium-sulfur battery according to claim 4, wherein the lithium protection solvent comprises one solvent selected from the group consisting of tetrahydro furan, ethylene oxide, dioxolane, 3,5-dimethylisoxazole, 2,5-dimethyl furane, furane, 2-methyl furane, 1,4-oxane and 4-methyldioxolane.

8. (currently amended) The lithium-sulfur battery according to claim 1, wherein said positive electrode further comprises at least one additive selected from the group consisting of a transition metal, a Group IIIA element, a Group IVA element, a sulfur compound thereof, and an alloy thereof.

9. (original) The lithium-sulfur battery according to claim 8, wherein the transition metal is selected from the group consisting of Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, Ta, W, Re, Os, Ir, Pt, Au and Hg.

10. (original) The lithium-sulfur battery according to claim 8, wherein the Group IIIA element is selected from the group consisting of Al, Ga, In and Tl, and the Group IVA element is selected from the group consisting of Si, Ge, Sn and Pb.

11. (original) The lithium-sulfur battery according to claim 1, wherein the electrolyte salts

comprise one salt selected from the group consisting of lithium trifluoromethane sulfonimide, lithium triflate, lithium perchlorate, $LiPF_6$, $LiBF_4$, tetraalkylammonium salts, and combinations thereof.

12. (currently amended) A lithium-sulfur battery comprising:

a negative electrode including a negative active material selected from the group consisting of materials in which lithium intercalation reversibly occur, a lithium alloy, and a lithium metal;

a positive electrode including a positive active material comprising at least one sulfur-based compound selected from the group consisting of elemental sulfur and organosulfur compounds, and an electrically conductive material; and

an electrolyte including electrolyte salts and mixed organic solvents,

wherein

the mixed organic solvents comprise at least two different groups selected from the group consisting of a weak polar solvent group, a strong polar solvent group, and a lithium protection solvent,

the weak polar solvent group is selected from the group consisting of xylene, dimethoxyethane, 2-methyltetrahydrofurane, diethyl carbonate, toluene, dimethyl ether, diethyl ether, diglyme and tetraglyme,

the strong polar solvent group is selected from the group consisting of hexamethyl phosphoric triamide, γ-butyrolactone, acetonitrile, ethylene carbonate, propylene carbonate, N-methyl pyrrolidone, 3-methyl-2-oxazolidone, dimethyl formamide, sulfolane, dimethyl acetamide, dimethyl sulfoxide, dimethyl sulfate, ethylene glycol diacetate, dimethyl sulfite, and ethylene glycol sulfite, ~~and~~

the lithium protection solvent is selected from the group consisting of tetrahydrofuran, ethylene oxide, dioxolane, 3,5-dimethylisoxazole, 2,5-dimethyl furane, furane, 2-methyl furane, 1,4-oxane and 4-methyldioxolane, and

where the weak polar solvent group is utilized, the mixed organic solvent includes less than 50% by weight of the weak polar solvent.

13. (currently amended) The lithium-sulfur battery according to claim 12, wherein said positive electrode further comprises at least one additive selected from the group consisting of a transition metal, a Group IIIA element, a Group IVA element, a sulfur compound thereof, and an ~~allow~~ alloy thereof.

14. (original) The lithium-sulfur battery according to claim 13, wherein the transition metal is selected from the group consisting of Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, Ta, W, Re, Os, Ir, Pt, Au and Hg.

15. (original) The lithium-sulfur battery according to claim 13, wherein the Group IIIA element is selected from the group consisting of Al, Ga, In and Tl, and the Group IVA element is selected from the group consisting of Si, Ge, Sn and Pb.

16. (original) The lithium-sulfur battery according to claim 12, wherein the lithium salt is selected from the group consisting of lithium trifluoromethane sulfonimide, lithium triflate, lithium perchlorate, $LiPF_6$, $LiBF_4$, tetraalkylammonium salts, and combination thereof.

17. (original) The lithium-sulfur battery according to claim 1, wherein the mixed organic solvent further comprises a third group such that the mixed organic solvent comprises the weak polar solvent group, the strong polar solvent group, and the lithium protection solvent group.

18. (original) The lithium-sulfur battery according to claim 12, wherein the mixed organic solvent further comprises a third group such that the mixed organic solvent comprises the weak polar solvent group, the strong polar solvent group, and the lithium protection solvent group.

19. (currently amended) An electrolyte for use in a lithium sulfur battery having electrodes, the electrolyte comprising:

a first solvent comprising one of

a weak polar solvent, which dissolves polysulfides having an oxidation number of sulfur that is near 0,

a strong polar solvent, which dissolves the polysulfides having an oxidation number of sulfur between 0 and –1, and

a lithium protection solvent, which forms a stable solid-electrolyte interface on a lithium surface of one of the electrodes; ~~and~~

a second solvent comprising another one of the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first and second solvents are different solvents, and

where the weak polar solvent is utilized, the mixed organic solvent includes less than 50% by weight of the weak polar solvent.

20. (original) The electrolyte according to claim 19, wherein the weak polar solvent is capable of dissolving elemental sulfur, and the strong polar solvent is capable of dissolving lithium polysulfide.

21. (original) The electrolyte according to claim 19, wherein the weak polar solvent is selected from the group consisting of aryl compounds, cyclic or noncyclic ether compounds, and noncyclic carbonate compounds, and has a dielectric coefficient of less than 15.

22. (original) The electrolyte according to claim 19, wherein the strong polar solvent is selected from the group consisting of cyclic carbonate compounds, sulfoxide compounds, lactone compounds, ketone compounds, ester compounds, sulfate compounds, and sulfite compounds, and has a dielectric coefficient of more than 15.

23. (original) The electrolyte according to claim 19, wherein the lithium protection solvent is selected from the group consisting of saturated ether compounds, unsaturated ether compounds, heterocyclic compounds including N, O and S.

24. (original) The electrolyte according to claim 21, wherein the weak polar solvent comprises one solvent selected from the group consisting of xylene, dimethoxyethane, 2-methyltetrahydrofurane, diethyl carbonate, dimethyl carbonate, toluene, dimethyl ether, diethyl ether, diglyme and tetraglyme.

25. (original) The electrolyte according to claim 22, wherein the strong polar solvent comprises one solvent selected from the group consisting of hexamethyl phosphoric triamide, γ-butyrolactone, acetonitrile, ethylene carbonate, propylene carbonate, N-methyl pyrrolidone, 3-methyl-2-oxazolidone, dimethyl formamide, sulfolane, dimethyl acetamide, dimethyl sulfoxide, dimethyl sulfate, ethylene glycol diacetate, dimethyl sulfite, and ethylene glycol sulfite.

26. (original) The electrolyte according to claim 23, wherein the lithium protection solvent comprises one solvent selected from the group consisting of tetrahydro furan, ethylene oxide, dioxolane, 3,5-dimethylisoxazole, 2,5-dimethyl furane, furane, 2-methyl furane, 1,4-oxane and 4-methyldioxolane.

27. (original) The electrolyte according to claim 19, further comprising a third solvent comprising a remaining one the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first, second, and third solvents are different solvents.

28. (original) The electrolyte according to claim 24, further comprising a third solvent comprising a remaining one the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first, second, and third solvents respectively comprise the weak polar solvent, the strong polar solvent, and the lithium protection solvent.

29. (original) The electrolyte according to claim 25, further comprising a third solvent comprising a remaining one the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first, second, and third solvents respectively comprise the weak polar solvent, the strong polar solvent, and the lithium protection solvent.

30. (original) The electrolyte according to claim 26, further comprising a third solvent comprising a remaining one the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first, second, and third solvents respectively comprise the weak polar solvent, the strong polar solvent, and the lithium protection solvent.

31. (currently amended) The electrolyte according to claim 19, further comprising a third solvent that is a solvent of a same group as one of said first ~~and~~ or second solvents.

32. (currently amended) The electrolyte according to claim 27, further comprising a fourth solvent that is a solvent of a same group as one of said first, second, ~~and~~ or third solvents.

33. (currently amended) A method of manufacturing a lithium-sulfur battery, comprising:

preparing a slurry comprising a conductive material, an organic binder, and a sulfur-based compound;

coating the slurry on a current collector to form a positive electrode;

providing a negative electrode including a negative active material including ~~one of~~ a material in which lithium intercalation reversibly occurs~~,~~ selected from the group consisting of a lithium alloy, and a lithium metal;

providing an electrolyte comprising

a first solvent ~~comprising one of~~ selected from the group consisting of a weak

polar solvent, which dissolves polysulfides having an oxidation number of sulfur that is near 0, a strong polar solvent, which dissolves the polysulfides having an oxidation number of sulfur between 0 and –1, and a lithium protection solvent, which forms a stable solid-electrolyte interface on a lithium surface of one of the electrodes, and

a second solvent comprising another solvent selected from the group consisting of the weak polar solvent, the strong polar solvent, and the lithium protection solvent such that said first and second solvents are different solvents;

placing the electrolyte between the positive and negative electrode using a separator to form the lithium-sulfur battery,

wherein, where the weak polar solvent is utilized, the mixed organic solvent includes less than 50% by weight of the weak polar solvent.

34. (original) The method according to claim 33, wherein the positive electrode is formed to have a porosity of at least 5% of a volume of the positive electrode.

35. (original) The method according to claim 33, wherein the positive electrode is formed to have a porosity is between 15% and 65% of a volume of the positive electrode.